

Utah Department of Transportation

Minimum Sampling and Testing Requirements

Revised January 2007

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UDOT Minimum Sampling and Testing Requirements

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Specification - Material: 02056 Embankment, Base, and Borrow

02056 Embankment, Base, and Borrow

Quality Assurance: Material for Embankment and Backfill placements. Soil Classification

Reference: AASHTO M 145

Lot Size: Source / soil type or each 20,000 cubic yards or 30,000 tons thereafter.

Frequency per Lot: One test

Point of Acceptance: Sampled from the grade after processing prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Weekly Form 348

Quality Assurance: Free Draining Granular Backfill Borrow and Underdrain Granular Backfill. Sieve analysis (gradation)

Reference: AASHTO T 27/T 11.

Lot Size: Daily Placement

Frequency per Lot: One per 500 tons or 350 cubic yards

Point of Acceptance: Grade after processing, prior to compaction

Sampling Reference: AASHTO T 2

Report/Form:

Quality Assurance: Laboratory Maximum Dry Density and Optimum Moisture for Density Standard

Reference: AASHTO T 99 Method D or AASHTO T 180 Method D for A-1 soils.

Lot Size: Source / soil type and each 20,000 cubic yards or 30,000 tons thereafter.

Frequency per Lot: One per 20,000 cubic yards or 30,000 tons for each layer.

Point of Acceptance: Grade after processing, prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Weekly Form 348

<i>Specification - Material: 02056 Embankment, Base, and Borrow</i>

Quality Assurance: In-place density of embankment and subgrade

Reference: AASHTO T 310

Lot Size: A lot equals material placed to line and grade and compacted in one production day

Frequency per Lot: A lot is divided into equal sublots not to exceed 5000 square yards, 150,000 square yards in cut sections. A minimum of one randomly located determination per sublot

Point of Acceptance: Grade after Compaction

Sampling Reference: MOI 8-984

Report/Form: Weekly Form 348

Quality Assurance: In-place density of backfill placements

Reference: AASHTO T 310

Lot Size: A lot equals 1000 square yards or less and not more than one pipe culvert or small structure.

Frequency per Lot: Four randomly located determinations per lot, minimum one determination per lift. Placements less than 10 cubic yards or 15 tons, test as directed by the engineer.

Point of Acceptance: Grade after Compaction

Sampling Reference: MOI 8-984

Report/Form: Weekly Form 348

Quality Assurance: Compaction - Material that is too rocky to apply the correction for coarse particles: 30% cumulatively retained on the ¾" sieve

Reference: AASHTO T 224

Lot Size:

Frequency per Lot: Compaction is visually inspected. Document method and equipment used for placement, appearance of gradation uniformity, moisture content, compactive effort, and final appearance.

Point of Acceptance:

Sampling Reference:

Report/Form: Weekly Form 348

<i>Specification - Material: 02056 Embankment, Base, and Borrow</i>

Quality Assurance: Visual Acceptance of very small quantities of materials

Reference: Acceptance is limited to only material being furnished from sources found satisfactory under normal sampling and testing procedures.

Lot Size: Not to exceed 200 cubic yards or 300 tons per day or 1000 cubic yards or 1500 tons per project

Frequency per Lot: One report for each day material is accepted

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection Report

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Specification - Material: 02332 Embankment for Bridge

02332 Embankment for Bridge

Quality Assurance: Soil Classification

Reference: AASHTO M 145

Lot Size: Source / soil type or each 20,000 cubic yards or 30,000 tons thereafter.

Frequency per Lot: One test

Point of Acceptance: Sampled from the grade after processing prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Weekly Form 348

Quality Assurance: Laboratory Maximum Dry Density and Optimum Moisture for density standard

Reference: AASHTO T 99 Method D or AASHTO T 180 Method D for A-1 soils.

Lot Size: Source/ soil type and each 20,000 cubic yards 30,000 tons thereafter

Frequency per Lot: One 20,000 cubic yards 30,000 tons for each layer

Point of Acceptance: Grade after processing, prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Weekly Form 348

Quality Assurance: In-place density of embankment for bridge

Reference: AASHTO T 310

Lot Size: One foot lift

Frequency per Lot: Six randomly located determinations per one foot lift. Two of the six determinations must be within two feet of the outside perimeter.

Point of Acceptance: Grade after Compaction

Sampling Reference: MOI 8-981

Report/Form: Weekly Form 348

Specification - Material: 02332 Embankment for Bridge

Quality Assurance: Compaction - Materials that is too rocky to apply the correction for coarse particles: 30% cumulatively retained on the 3/4" sieve

Reference: AASHTO T 224

Lot Size:

Frequency per Lot: Compaction is visually inspected. Document method and equipment used for placement, appearance of gradation, uniformity, moisture content, compactive effort, and final appearance

Point of Acceptance:

Sampling Reference:

Report/Form: Weekly Form 348

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Specification - Material: 02721 UTBC

02721 UTBC

Quality Assurance: Visual Acceptance of very small quantities of materials

Reference: Acceptance is limited to only materials being furnished from sources found satisfactory under normal sampling and testing procedures.

Lot Size: Not to exceed 200 tons per day or 1500 tons per project.

Frequency per Lot: One report for each day material is accepted.

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection Report

02721 UTBC Type I

Quality Assurance: Type I Placement Sieve Analysis

Reference: AASHTO T 27 / T 11

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: One per subplot of 500 cubic yards or 900 tons

Point of Acceptance: Grade after processing prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Daily Form 138

Quality Assurance: Type I Placement Maximum Dry Density and Optimum Moisture Determination for Density Standard

Reference: AASHTO T 180 Method D

Lot Size: 100,000 cubic yards or 180,000 tons

Frequency per Lot: One to be used as a density standard for in-place density determination

Point of Acceptance: Grade after processing, prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Daily Form 138

<i>Specification - Material: 02721 UTBC Type I</i>
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Quality Assurance: Type I Placement In-place density

Reference: AASHTO T 310

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: One per subplot of 2500 square yards

Point of Acceptance: Grade after Compaction

Sampling Reference: MOI 8-984

Report/Form: Form 138

Quality Assurance: Type I Placement Moisture Content

Reference: AASHTO T 255

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: One per subplot of 2500 cubic yards or 4500 tons

Point of Acceptance: Grade after processing prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Form 138

02721 UTBC Type II

Quality Assurance: Type II Placement Sieve Analysis and Moisture Content

Reference: AASHTO T 27 / T 11, AASHTO T 255

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: One per lot: Curb and Gutter – 10,000 feet; Sidewalk – 3000 square yards; Driveway, Pedestrian Access Ramp, Waterway, Flatwork, and other items not listed above – 25,000 square feet

Point of Acceptance: Grade after processing prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Daily Form 138

<i>Specification - Material: 02721 UTBC Type II</i>

Quality Assurance: Type II Placement Maximum Dry Density and Optimum Moisture Determination

Reference: AASHTO T 180

Lot Size: 100,000 cubic yards or 180,000 tons

Frequency per Lot: One to be used as a density standard for in-place density determination

Point of Acceptance: Grade after processing, prior to compaction

Sampling Reference: AASHTO T 2

Report/Form: Daily Form 138

Quality Assurance: Type II Placement In-place density

Reference: AASHTO T 310

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: One per subplot: Curb and Gutter – 10,000 feet; Sidewalk – 3000 square yards; Driveway, Pedestrian Access Ramp, Waterway, Flatwork, and other items not listed above – 25,000 square feet

Point of Acceptance: Grade after Compaction

Sampling Reference: MOI 8-984

Report/Form: Form 138

02721 UTBC Type III

Quality Assurance: Type III Placement Moisture Content - Contractor provided optimum moisture may be used as the moisture standard

Reference: AASHTO T 255 or AASHTO T 310

Lot Size: Quantity processed, placed to line and grade in one day.

Frequency per Lot: Twice daily during placement

Point of Acceptance: Grade

Sampling Reference: AASHTO T 2, MOI 8-984

Report/Form: Daily Form 138

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Specification - Material: 02741 HMA

02741 HMA

Quality Assurance: Asphalt Binder Content

Reference: AASHTO T 308

Lot Size: Production Day

Frequency per Lot: Four

Point of Acceptance: Grade behind the paver

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: Sieve Analysis

Reference: AASHTO T 30

Lot Size: Production Day

Frequency per Lot: Four

Point of Acceptance: Grade behind the paver

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: Theoretical Maximum Specific Gravity (Rice)

Reference: AASHTO T 209

Lot Size: Production Day

Frequency per Lot: Three in conjunction with VMA determination

Point of Acceptance: Grade behind the paver

Sampling Reference: MOI 8-984

Report/Form:

<i>Specification - Material. 02741 HMA</i>
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Quality Assurance: Voids in Mineral Aggregate (VMA) Determination

Reference: AASHTO T 312, R 35

Lot Size: Production Day

Frequency per Lot: Three, in conjunction with Rice Determination

Point of Acceptance: Grade behind the paver

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: In-Place Density

Reference: AASHTO T 166

Lot Size: Production Day

Frequency per Lot: Ten, two in each of five equal sublots

Point of Acceptance: Grade after compaction, prior to traffic

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: Thickness

Reference: Avg. of three measurements on each core recorded to 1/8 in.

Lot Size: Production Day

Frequency per Lot: Ten in conjunction with in-place density determination

Point of Acceptance: Grade after compaction, prior to traffic

Sampling Reference: MOI 8-984

Report/Form:

<i>Specification - Material: 02741 HMA</i>
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Quality Assurance: Smoothness

Reference: Standard Specification 01452

Lot Size:

Frequency per Lot:

Point of Acceptance:

Sampling Reference:

Report/Form:

Quality Assurance: Visual Acceptance of very small quantities of materials

Reference: Acceptance is limited to only materials being furnished from sources found satisfactory under normal sampling and testing procedures

Lot Size: Not to exceed 100 tons per day or 1000 tons per project

Frequency per Lot: One report for each day material is accepted

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection

UDOT Minimum Sampling and Testing Requirements

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Specification - Material: 02745 Asphalt Materials

02745 Asphalt Materials

Quality Assurance: Cutback Asphalt

Reference: AASHTO M 81, M 82, ASTM D2026

Lot Size: Each Truck/Trailer

Frequency per Lot: Sample each lot, two 1 quart samples (metal can). Submit one sample per 155 tons to central

Point of Acceptance: Project or Plant

Sampling Reference: AASHTO T 40

Report/Form: 509

Quality Assurance: Asphalt Emulsions/Rejuvenating agents, SS, CSS, MS, CMS, CQS, emulsified Primes/Type B, C, D

Reference: Asphalt Emulsion Management Plan (QMP 508)

Lot Size: Only when product is questionable

Frequency per Lot: Check sample, one quart sample (plastic bottle)

Point of Acceptance: Project or Plant

Sampling Reference: AASHTO T 40

Report/Form: 509

Quality Assurance: PG Asphalt Binders

Reference: AASHTO M 320, QMP 509

Lot Size: Production Week

Frequency per Lot: Three one-quart samples (metal can) per daily subplot. Submit one per week to Central Binder lab.

Point of Acceptance: Injection line at the Hot Plant

Sampling Reference: AASHTO T 40

Report/Form: 509

<i>Specification - Material: 02745 Asphalt Materials</i>
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Quality Assurance: Visual Acceptance of very small quantities of materials

Reference: Acceptance is limited to only materials being furnished from sources found satisfactory under normal sampling and testing procedures

Lot Size: Not to exceed 10 tons per day or 45 tons per project

Frequency per Lot: One report for each day material is accepted

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection Report

UDOT Minimum Sampling and Testing Requirements

Revised January '07

Specification - Material: 02752 Portland Cement Concrete Pavement

02752 Portland Cement Concrete Pavement

Quality Assurance: Sieve Analysis

Reference: AASHTO T 27 / T 11

Lot Size: Paving Day

Frequency per Lot: One per stockpile

Point of Acceptance: Project Stockpile

Sampling Reference: AASHTO T 2

Report/Form:

Quality Assurance: Slump, Air Content, and Concrete Temperature

Reference: AASHTO T 119, AASHTO T 152, AASHTO T 309

Lot Size: Paving Day

Frequency per Lot: At beginning of placement, after shutdowns of 1 hour or more, and after each failed batch, test until three consecutive batches meet specification. Randomly thereafter for each 800 cubic yards minimum.

Point of Acceptance: Plant site (Platform) for centrally mixed concrete with non-agitating haul units. Grade for agitating haul units. If first determination fails, immediately retest. If the second test meets specification, immediately retest. Batch is rejected on two failed determinations.

Sampling Reference: WAQTC TM 2

Report/Form:

Quality Assurance: Air Content Correlation testing to determine loss of entrained air from the platform to the finished in-place pavement.

Reference: AASHTO T 152

Lot Size: Paving Day

Frequency per Lot: Two tests, one in the morning and one in the afternoon for each day of paving operations. Perform air test at the platform and again from the same load in the finished pavement.

Point of Acceptance: Plant site (Platform) and finished pavement.

Sampling Reference: WAQTC TM 2

Report/Form:

<i>Specification - Material: 02752 Portland Cement Concrete Pavement</i>
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Quality Assurance: Density-Yield

Reference: AASHTO T 141

Lot Size: Paving Day

Frequency per Lot: One determination per day in conjunction with an air test.

Point of Acceptance: Plant site (Platform) for centrally mixed concrete with non-agitating haul units. Grade for agitating haul units.

Sampling Reference: WAQTC TM 2

Report/Form:

Quality Assurance: Compressive Strength Test - For concrete centrally mixed with non-agitating haul units.

Reference: Cast in accordance with AASHTO T 23. Tested in accordance with AASHTO T 22. One compressive strength test consists of a set of three cylinders.

Lot Size: Paving Day

Frequency per Lot: One strength test represents 3000 Square yards. Hand-placed areas are considered separately.

Point of Acceptance: Plant site (Platform)

Sampling Reference: WAQTC TM 2

Report/Form:

Quality Assurance: Compressive Strength Test - For concrete centrally mixed with agitating haul units or transit mixed at placement location.

Reference: Cast in accordance with AASHTO T 23. Tested in accordance with AASHTO T 22. One compressive strength test consists of a set of three cylinders

Lot Size: Paving Day

Frequency per Lot: One strength test represents 725 square yards or one days placement whichever is smaller

Point of Acceptance: Grade

Sampling Reference: WAQTC TM 2

Report/Form:

<i>Specification - Material: 02752 Portland Cement Concrete Pavement</i>
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Quality Assurance: Thickness

Reference: Thickness, determined by three measurements on each core, recorded to 1/16 in and averaged.

Lot Size: Paving Day

Frequency per Lot: One core per 12,000 square feet. Final areas less than 6000 square feet will be added to the previous section. Final section over 6000 square ft. will constitute a separate area. Hand placements are considered separately. One core per placement area.

Point of Acceptance: Finished pavement

Sampling Reference: Randomly sampled according to AASHTO T 24

Report/Form:

Quality Assurance: Thickness - For placements over existing surfaces

Reference: Graph of the deviations from the profile grade established by the plans or Engineer. Meet requirements listed in 02752

Lot Size: Paving Day

Frequency per Lot: Engineer takes elevations at 100 foot intervals and compares against the profile and graph.

Point of Acceptance: Finished pavement

Sampling Reference:

Report/Form:

Quality Assurance: Smoothness

Reference: Standard Specification 01452

Lot Size:

Frequency per Lot:

Point of Acceptance:

Sampling Reference:

Report/Form:

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Specification - Material: 02785 Chip Seal Coat

02785 Chip Seal Coat

Quality Assurance: Sieve Analysis

Reference: AASHTO T 27 / T 11

Lot Size: Stockpile

Frequency per Lot: One gradation per 500 tons of material (estimated) in stockpile

Point of Acceptance: Accept cover material at the source or the project stockpile. Retest at the project stockpile at engineer's discretion

Sampling Reference: AASHTO T 2

Report/Form:

UDOT Minimum Sampling and Testing Requirements

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Specification - Material: 02786 Open Graded Seal Coat

02786 Open Graded Seal Coat

Quality Assurance: Asphalt Binder Content

Reference: AASHTO T 308

Lot Size: Production Day

Frequency per Lot: Four

Point of Acceptance: Hot Plant

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: Sieve Analysis

Reference: AASHTO T 30

Lot Size: Production Day

Frequency per Lot: Four

Point of Acceptance: Hot Plant

Sampling Reference: MOI 8-984

Report/Form:

Quality Assurance: Thickness

Reference: Verify with a depth probe

Lot Size:

Frequency per Lot:

Point of Acceptance:

Sampling Reference:

Report/Form:

<i>Specification - Material: 02786 Open Graded Seal Coat</i>
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Quality Assurance: Smoothness

Reference: Standard Specification 01452

Lot Size:

Frequency per Lot:

Point of Acceptance:

Sampling Reference:

Report/Form:

Quality Assurance: Visual Acceptance of very small quantities of materials

Reference: Acceptance is limited to only material being furnished from sources found satisfactory under normal sampling and testing procedures.

Lot Size: Not to exceed 100 tons per day or 1000 tons per project

Frequency per Lot: One report for each day material is accepted

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection Report

UDOT Minimum Sampling and Testing Requirements

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Specification - Material: 02962 In-Place Cold Recycled Asphaltic Base

02962 In-Place Cold Recycled Asphaltic Base

Quality Assurance: In-Place Density

Reference: WAQTC TM 8

Lot Size: Production day

Frequency per Lot: 5 (each test average of 3 determinations)

Point of Acceptance: Pavement after compaction.

Sampling Reference: MOI 8-981

Report/Form:

Quality Assurance: In-Place Density Standard

Reference: ASHTO T 245 (50 blow Marshall), AASHTO T 166

Lot Size: Production day

Frequency per Lot: One

Point of Acceptance: Grade prior to compaction

Sampling Reference: MOI 8-985

Report/Form:

UDOT Minimum Sampling and Testing Requirements

Revised January '07

Specification - Material: 03055 Portland Cement Concrete

03055 Portland Cement Concrete

Quality Assurance: Sieve Analysis

Reference: AASHTO T 27 / T 11

Lot Size: Weekly production

Frequency per Lot: One test per stockpile during any week concrete is being provided to a UDOT project

Point of Acceptance: Supplier Stockpile

Sampling Reference: AASHTO T 2

Report/Form:

Quality Assurance: Slump, Air Content, and Concrete Temperature

Reference: AASHTO T 119, AASHTO T 152, AASHTO T 309

Lot Size: Production Day

Frequency per Lot: At beginning of placement, after shutdowns of 1 hour or more, and after each failed batch, test until two consecutive batches meet specification. Randomly thereafter for each 50 cubic yard minimum.

Point of Acceptance: Project Location – if first determination fails, immediately retest. If the second test meets specification, immediately retest. Batch is rejected on two failed determinations.

Sampling Reference: WAQTC TM 2

Report/Form:

Quality Assurance: Compressive Strength Test

Reference: Cast in accordance with AASHTO T 23 Tested in accordance with AASHTO T 22. One compressive strength test consists of a set of three cylinders.

Lot Size: Production Day

Frequency per Lot: One determination for each 50 cubic yards or fraction thereof. For placements less than 8 cubic yards, at Engineer's discretion.

Point of Acceptance: Project Location

Sampling Reference: WAQTC TM 2

Report/Form:

<i>Specification - Material: 03055 Portland Cement Concrete</i>

Quality Assurance: Visual Acceptance of very small quantities of material

Reference: Acceptance is limited to only materials being furnished from sources found satisfactory under normal sampling and testing procedures.

Lot Size: Not to exceed 4 cubic yards per day or 50 cubic yards per project.

Frequency per Lot: One report for each day material is accepted.

Point of Acceptance: Grade

Sampling Reference:

Report/Form: Visual Inspection Report
